

REMARKS

In view of the above amendments and following remarks, reconsideration of the objections and rejections contained in the Office Action of June 29, 2005 is respectfully requested.

Fig. 6 has been labeled as prior art in accordance with the requirement of the Examiner. Further, it is noted that Fig. 1 has been amended to include reference numbers 13A and 13B as employed in the specification.

The objections to the claims have been addressed in the above amendments.

The Examiner rejected claim 1 as being anticipated by Takizawa et al., U.S. Patent 4,978,966. (Takizawa) Further, claims 5-10 were rejected as being unpatentable over Takizawa in view of Maruyama et al., U.S. Patent 6,400,330 (Maruyama). Claim 11 was rejected as being unpatentable over Takizawa in view of Yoshida et al., U.S. 2004/0061660 (Yoshida). However, it is respectfully submitted that the present invention, particularly as now claimed, clearly distinguishes over Takizawa, Maruyama and Yoshida.

It is noted that the Examiner indicated that claims 2-3 would be allowable if rewritten into independent form and so as to include all of the limitations of the base claim. Accordingly, by the above amendment claims 2 and 3 have been rewritten as new claims 12 and 22, respectively. New dependent claims 13-20 and 23-29 all depend from claims 12 and 22, and thus all of claims 12-20 and 22-29 should clearly be in condition for allowance.

New independent claims 21 and 30 are communication system claims which include all of the limitations of claims 12 and 22, respectively. Accordingly, these claims should also clearly be in condition for allowance at this time.

Independent claims 1 and 11 remain, and have been amended above. Both of these claims have been amended to recite that the second core is operable to move within an area between the portion of the conductive wire and the first core.

The present invention relates to an antenna that employs a core made of magnetic material that has a coil that includes a conductive wire having a portion wound around a predetermined region of the core. Note for example conductive wire 13 wound around core 11 in Fig. 1. The present inventors have recognized that the density of magnetic flux at the inside of the coil is higher than that

at the outside of the coil. Accordingly, movement of a core portion that is within the area between the portion of the conductive wire and the first core will allow for a greater adjustment of resonance frequency than movement of a core outside of the coil. Thus the present invention provides a second core 14, for example, made of magnetic material, the second core being operable to move within the area between the portion of the conductive wire and the first core.

The patent to Takizawa, cited as anticipating claim 1, does not include a second core made of second magnetic material, with the second core being operable to move within an area between a portion of the conductive wire and the first core as now required by each of claims 1 and 11. Takizawa discloses a plurality of rod-shaped cores L_1 to L_n located in a coil 2. The core L_1 to L_n are arranged in series in the coil 2 however, and no one of the cores L_1 to L_n is located between the coil and another coil of the coils L_1 to L_n .

The Examiner cited Fig. 6 as demonstrating how a second core is operable to move inside of the coil 2. It is noted that column 3 describes Fig. 6 as showing an example how the resilient antenna coil 2 is wound on the rod-shaped core 1. In any case, it is clear that Takizawa does not meet the limitations of claims 1 and 11 as now recited.

Maruyama was cited by the Examiner as disclosing certain magnetic materials. Whether or not Maruyama in fact properly would suggest such materials in combination with Takizawa, the combination clearly fails to resolve the deficiencies of Takizawa.

Yoshida was recited in combination with Takizawa to address the limitations of claim 11. However, it is respectfully submitted that Yoshida does not suggest the present invention as now claimed to one of ordinary skill in the art.

Yoshida discloses a three-axis antenna chip that includes a cross-shaped core made of magnetic material. Two core pieces 72 that cross each other are made up of stacking a plurality of core sheets.

As a first point, Yoshida does not disclose a movable core. There is no suggestion to one of ordinary skill in the art that providing any such laminated core sheets in Takizawa would result in a second core that is operable to move within an area between a portion of a conductive wire and a first core.

The Examiner states that Yoshida teaches "a plurality of laminated core sheets, therefore one core is within the coil along the predetermined area of the other core (figure 8, paragraph 0060)". However, even if this is the case, it does not make it movable. Paragraph 60 on page 4 of Yoshida discusses stacking a plurality of flexible core sheets so that if one is broken the others might not be broken. However, this does not make a second core "operable to move within an area between the portion of the coil in the first core" as required by claims 1 and 11.

Further, there is in fact no suggestion to one of ordinary skill in the art to combine Yoshida with Takizawa as proposed by the Examiner. The Examiner states that it would have been obvious to provide Takizawa "with a second core being operable to move at an inside of the coil along the predetermined area of the first core." However, this is without foundation in Yoshida. Yoshida does not disclose movement of a second core inside of the coil along a predetermined area of a first core, contrary to the Examiner's statement. Yoshida simply discusses the possibility of the core sheet breaking. This is not the same thing.

The Examiner proposes the combination in order to improve the shock resistance of the antenna chip, again citing paragraph 60. However, Takizawa specifically provides rod-shaped cores aligned end to end. The object is to provide the antenna so that it can be mounted so as to not project to the exterior of a car, and along any curved surface or contour of the car body. Note the "Object of the Invention" recited in columns 1 and 2 of Takizawa.

Yoshida is directed to reducing the size of a remote control apparatus that comprises a portable transmitter-receiver. This has been a problem with one-axis antennas, and so Yoshida provides a multiaxial antenna chip including at least two arm portions to enable the reduction in size. Because it is a portable unit, the issue with respect to potential breakage of a core sheet can be more readily appreciated. However, there is no indication that any such problem would be present in Takizawa. Takizawa is directed to an antenna that is mounted in the car itself. Thus the Examiner's stated purpose behind making the combination, i.e. improving the shock resistance of the antenna chip, is without foundation in the references, because they are directed to different problems for different components. Yoshida's comments about possible breakage of a core sheet are not germane to the rod-shaped cores that are aligned in an end-to-end relationship in a very different structure in

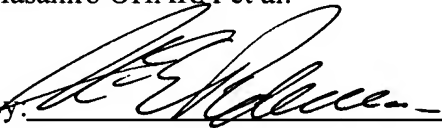
Takizawa. There is no relationship of the problems being addressed in the respective patents, and no proper suggestion to one of ordinary skill in the art. As such, it is respectfully submitted to be clear that one of ordinary skill in the art would not have made the combination as proposed by the Examiner.

In view of the above, it is respectfully submitted to be clear that all of the claims that now pend in the present application are in condition for allowance. Indication of such is respectfully requested.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance, and the Examiner is requested to pass the case to issue. If the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact Applicants' undersigned representative.

Respectfully submitted,

Masahiro OHARA et al.

By: 

Nils E. Pedersen
Registration No. 33,145
Attorney for Applicants

NEP/krp
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
September 26, 2005